

MONTHLY REPORT

1 November 1958 - 30 November 1958

RESEARCH AND DEVELOPMENT BRANCH  
ENGINEERING STAFF

RESEARCH AND DEVELOPMENT LABORATORY

1. PROJECTS AND ACTIVITIES

2001 - MECHANICAL LABORATORY PROJECTS

The following is a status report of Mechanical Laboratory assignments other than the support given to regularly assigned numbered projects:

- 2001-55      Encipher Tape Notching Unit - 1 required by SEB.  
The fabrication of the prototype is now in process.
- 2001-57      OTP Plastic Molds - 4 required by OC-S.  
One mold complete. The additional three molds are  
in the process of completion.
- 2001-63      Fox Test Drums - 10 units and 4 drums required by  
SEB, completed 6 November 1958.
- 2001-66      TINY TOT T.D. Shelves - 100 required by SEB, 10%  
complete. This project is proceeding on a fill-in  
basis.
- 2001-69      Distributor Ring for OTP-3 - 5 required by SEB.  
This project has not been started but will begin on  
the 1st of December.
- 2001-70      Microswitch Modification - 256 required by SEB.  
90 switches completed. The balance will be completed  
on a fill-in basis.

2004-118      R 744/PRD RADIO RECEIVER  
Project Engineer: Unassigned

Awaiting receipt of equipment.

2004-133      TINY TOT RADIATION INVESTIGATION  
Project Engineer:

25X1A9a

Measurements and developments are complete. No further work has been done on the report because of a higher priority project (KX-3 Radiation Measurement).

2004-135 PROJECT TAILOR (0.5 and 5 watt, A-1 Emission Plug-in  
Modular Transmitter) Project Engineer: [ ]

25X1A9a

This project evaluation has been temporarily suspended pending the repair of the modular oscillator stage. The RF oscillator was found reluctant to start.

2004-141 JOHNSON THUNDERBOLT LINEAR AMPLIFIER  
Project Engineer: [ ]

25X1A9a

This amplifier was tested for use with the RT-3, RT-6A and URT-11 transmitters (CW operation). Tests indicated that the amplifier can be used with the RT-3 and URT-11 transmitters except that an RF attenuator must be used with the URT-11 transmitter to prevent overdriving the amplifier. The RT-6A transmitter does not provide enough driving power for the amplifier and the mechanical structure of the amplifier is considered too weak to be transported satisfactorily without removal of the power transformer. The tests are completed.

2005-112 MARK 217 TRANSMITTER  
Project Engineer: [ ]

25X1A9a

This project is completed. Test results indicate that this is a very good transmitter for the 3 - 17 mc frequency range. Output power ranges from 6 to 10 watts. Power output per pound of weight is excellent and the tuning controls and indicators are very good. Power requirement is 40 to 60 cycle AC at voltages of 110 to 245 and a hand crank generator is available as an accessory for the equipment.

Undesirable characteristics include high key click radiation and high aural noise from the hand key.

2005-113 TRANSMITTER-RECEIVER BEACON MODEL SDR-394  
Project Engineer: [ ]

25X1A9a

This project is completed. Performance of this equipment was not outstanding. It compares unfavorably with the SARAH.

2007-1 RADIOLOGICAL SURVEY AND RADIATION DETECTION EQUIPMENT  
Project Engineer: [ ]

25X1A9a

The subject equipment stored at [ ] was tested to determine its operational status. Two instruments were found inoperative and are currently being repaired.

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2007-20     KEYER FABRICATION AND RT-6 TRANSMITTER MODIFICATION  
Project Engineer:

25X1A9a

A keying circuit modification for the RT-6 and RT-6A transmitters has been breadboarded and tested with the KE-6 keyer. The test indicates satisfactory operation with respect to keying waveform and key-click radiation. The KE-6 was operated with the RT-6 and RT-6A on both AC and DC power. A prototype unit and instructions have been prepared for use in fabricating and assembling the modification in kit form for field installation. This work will be done by an external contractor. Upon completion of the first kit, the R&D Laboratory will prepare the necessary field installation instructions.

Tests are completed on the German Distler motor and the American Reflectone PM-1 motor. The radiation from the Distler motor was consistently higher than the Reflectone; however, it was concluded that radiation from either motor would produce noise of a nuisance value only.

2007-30     TINY TOT MODIFICATION KITS  
Project Engineer:

25X1A9a

This project is approximately 80% complete.

2007-33     EVEREADY AND GULTON BATTERIES  
Project Engineer:

25X1A9a

This project is completed. The Eveready "Energizer" battery performance looks good. It is especially valuable when current drains in excess of 100 ma are required. It has from 2 to 8 times the milliampere hour capacity of the standard "D" cell. Some trouble was experienced with the terminal caps but the company assured us that this defect has been corrected.

The Gulton ni-cad batteries perform about like the batteries from other companies. They are somewhat larger than similar batteries produced by other companies. The vented cells appear to be usable items. The sealed cells could not be charged at the maximum rated current as stated by the manufacturer. Gas pressure broke the seals and destroyed the cells. They are not considered satisfactory unless the case is kept under pressure. Salt formations at the seals indicated leakage from the cases. They should never be enclosed with electronic circuitry that might be susceptible to corrosion from the salt.

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used without selection of governors. Further tests and study of results will be required to establish this point.

The two sample motors submitted for test with the above governors show excessively high external magnetic field strength. In addition, and probably for the same reason, the magnetic detent action on the rotor is far stronger than in the motor sample previously submitted. Both problems were present in the initial prototypes and were once solved by a change in the method used to magnetize the motor material. The contractor has been made aware of the current difficulty and two additional sample motors have been requested.

Testing of the motor and governor has been suspended temporarily to support priority projects; namely, the KE-9, CR-4, RT-6 modification, RT-13 and RT-11.

2064      REUSEABLE TAPE (TP-3)

Project Engineer:

25X1A9a

Temporarily suspended awaiting receipt of a TP-3 to continue tests.

2069      AGENT RADIO TRANSMITTER, RT-11P

Project Engineer:

25X1A9a

Modifications have been breadboarded for RT-11A and RT-11B operation from a 12-volt DC-to-DC converter. Satisfactory operation from the standpoint of power output, power input, and keying characteristics has been attained. Packaging of the power unit is now in process.

2089A      HIGH-SPEED COMMUNICATIONS SYSTEM, AS-4A

Project Engineer:

25X1A9a

Two days were spent modifying the AGC system of the AS-4A. The AGC performance was materially improved by the modification.

2097      AGENT TRIPHASE COMMUNICATIONS SET, RS-18

Project Engineer:

25X1A9a

spent the past three weeks at  at Los Angeles, California studying the RS-18. (See Trip Report: RS-18 Training Program, dated 24 November 1958)

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2099 AGENT COMMUNICATIONS SYSTEM RS-13B AND BASE STATION CONVERTER  
Project Engineers: [REDACTED]

25X1A9a

Fabrication of the rotary coils and the gear layout for the tuning mechanism have been completed. Assembly of the mechanical system can begin as soon as the gears are received. Design rework in the driver and final stages has been completed but has not yet been breadboarded. These circuits will be breadboarded when the tuning mechanism becomes available. The CV-13 (Base Station Converter) portion of the project is complete, except for the preparation of the instruction book.

2110 SPECIAL COMPONENTS INVESTIGATION [REDACTED]  
Project Engineer: [REDACTED]

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25X1A9a

An effort has been made to evaluate the [REDACTED] Communications Receiver and the Selective Calling System. Because of poor operating performances the evaluation was suspended awaiting consultation with the [REDACTED] engineers.

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2523 APERIODIC RECEIVER SYSTEM, CS-24  
Project Engineer: [REDACTED]

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The prototype CR-4 Receiver has been assembled and is now being checked and "debugged" prior to final testing by the A&A Unit. It is expected that the A&A tests will be completed during the second week of December at which time the unit will be forwarded to SPS for evaluation and comment.

A breadboard model of the <sup>frequency</sup> signal readout device, IN-11, has been built and tested. Package design has been tentatively established, the dimensions of which are approximately 4-1/2" x 3-1/2" x 3".

Sixteen each 30 - 80 mc filters are completed and all other band-pass filters are approximately 80% complete.

2525 TWT/CRYSTAL-VIDEO RECEIVER, CR-21  
Project Engineer: [REDACTED]

25X1A9a

The CR-21 Receiver was delivered to SPS on 26 November. The instruction manual is expected to be ready for distribution early in this period.

2526 PORTABLE ELECTRONIC KEYS, KE-9  
Project Engineers: [REDACTED]

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With the exception of the keyboard and the interconnection board, the all-transistor keyer is now ready for package layout. The

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keyboard design continues to receive full time and should be completed early in this period. The printed circuit master for the interconnection board is complete and this board is now being processed. The shift-register version of the keyer has been successfully breadboarded and the printed circuit layout is approximately complete. During this period work will continue on both keyers except where the latter approach might interfere with the speedy completion of the all-transistor keyer. This approach is being taken to insure a prototype unit of at least one version of the keyer will be ready by 7 January; however, prototype units of both versions of the keyer will be carried through to completion.

2629      TRANSISTORIZED CALIBRATOR, IN-10  
Project Engineers:

25X1A9a

Three additional receivers with IN-10 calibrators installed have been delivered to OSI making a total of seven units delivered. Of the remaining eight units required, three are now on hand and will be processed as soon as the work load permits. The last five units will not be forwarded to the Laboratory until after the three units now on hand have been delivered.

Chief, Research & Development Laboratory

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